



Cabling Specifications

This appendix describes cables and cabling guidelines for the router and contains the following sections:

- [Ethernet Cables](#)
- [Ethernet Network Cabling Guidelines](#)
- [Console Cable and Adapter](#)
- [VIC Cables and Pinouts](#)
- [Cables and Pinouts for 2-Port ISDN BRI Card](#)



Note

For detailed information about cables used with Cisco WICs and VICs, refer to the *Cisco WAN Interface Cards Hardware Installation Guide* that comes with each of the cards.

Ethernet Cables

This section describes the Ethernet cables that you use to connect the router to your local Ethernet network. A 10/100BASE-TX router, such as the Cisco 1760 router, requires Category 5 twisted-pair cable. [Table B-1](#) describes the pinouts for an RJ-45-to-RJ-45 Ethernet cable.

Table B-1 *Straight-Through Ethernet Cable (RJ-45-to-RJ-45) Pinouts*

RJ-45 Pin ¹	Signal	Direction	RJ-45 Pin
1	TX+	—>	1
2	TX–	—>	2
3	RX+	<—	3
6	RX–	<—	6

1. Pins 4, 5, 7, and 8 are not used for signaling but for reducing radiated cable emissions.

Ethernet Network Cabling Guidelines

[Table B-2](#) describes guidelines for creating Ethernet networks. Numbers might vary, depending on the manufacturer of the network equipment.

Table B-2 *Ethernet Cabling Guidelines*

Specification	10BASE-T	100BASE-TX
Maximum segment length	100 meters	100 meters
Maximum number of segments per network	5	<ul style="list-style-type: none"> With Class I repeaters: 1 With Class II repeaters: 2
Maximum hop count ¹	4	<ul style="list-style-type: none"> With Class I repeaters: none With Class II repeaters: 1
Maximum number of nodes per segment	1024	1024
Cable type required	Category 3, 4, or 5	Category 5

1. Hop count = routing metric used to measure the distance between a source and a destination.

Console Cable and Adapter

A console cable is provided with your router. Use this cable to connect the router to a PC or terminal. A DB-9-to-DB-25 adapter is also provided for connecting the router to a modem, using the console cable.

[Table B-3](#) describes the wiring for the console port and the console cable. This table also includes pinouts for the DB-9-to-DB-25 adapter.

Table B-3 Console Cable and Adapter Pinouts

Console (DTE)	Console Port	Console Cable	Adapter	Terminal (DTE)
Signal	RJ-45 Pin	DB-9 Pin	DB-25 Pin	Signal
RTS	1	8	5	CTS
DTR	2	6	6	DSR
TXD	3	2	3	RXD
GND	4	5	7	GND
GND	5	5	7	GND
RXD	6	3	2	TXD
DSR	7	4	20	DTR
CTS	8	7	4	RTS

VIC Cables and Pinouts

This section describes the VIC cables and pinouts for foreign exchange station (FXS), foreign exchange office (FXO), and recEive and transMit (or ear and mouth) (E&M) connectors. Use the following cables to connect the VICs to the network:

- Standard RJ-11 modular telephone cable to connect FXS VIC ports (gray) to a telephone or fax machine.
- Standard RJ-11 modular telephone cable to connect FXO VIC ports (pink) to the PSTN or to a PBX that does not support E&M signaling.

- Standard RJ-48S connector and cable to connect E&M VIC ports (brown) to a PBX line. The cable wiring depends on the PBX type and connection. For details, refer to the *Cisco WAN Interface Cards Hardware Installation Guide*.

Figure B-1 shows how to connect the VICs to the network.

Figure B-1 Connecting VICs to the Network

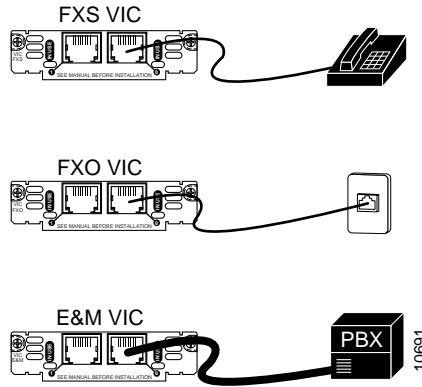


Table B-4 lists the pinouts for FXS and FXO VIC connectors.



Note

Pins that are not used should not be connected.

Table B-4 Pinouts for FXS and FXO Connectors

Pin	Signal
1	—
2	—
3	Ring
4	Tip
5	—
6	—

The E&M VIC pinout depends on the PBX type and connection. [Table B-5](#) lists the pinouts for the E&M connector.

**Note**

Pins that are not used should not be connected.

Table B-5 E&M Pinouts

Pin	Signal	Description
1	SB	–48V signaling battery
2	M-lead	Signaling input
3	R	Ring, audio input
4	R or R1	Ring, audio input/output, or output
5	T or T1	Tip, audio input/output, or output
6	T	Tip, audio input
7	E-lead	Signaling output
8	SG	Signaling ground return

Cables and Pinouts for 2-Port ISDN BRI Card

Use the straight-through RJ-45 cable to connect the 2-port ISDN BRI card to an ISDN network through a telephone wall outlet or other device.

**Note**

When an interface configured as network termination (NT) is connecting to a terminal equipment (TE) device, the cable must have the transmit and receive pins swapped (crossover cable). (See [Table B-6](#).)

Table B-6 Interface Pin Numbers and Functions

ISDN BRI NT/TE	NT Interface (straight-through cable)	TE Interface (crossover cable)
Pin 3/T+	Pin 3/R+	Pin 3/T+
Pin 4/R+	Pin 4/T+	Pin 4/R+
Pin 5/R–	Pin 5/T–	Pin 5/R–
Pin 6/T–	Pin 6/R–	Pin 6/T–